



**MegaRAID IDE (ATA/66) and  
MegaRAID IDE 100 (ATA/100)  
Linux Installation  
User's Guide**

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## **Revision History**

11/1/00 Initial Linux Installation Documentation.  
12/13/00 Changed name of product from HyperDisk to MegaRAID IDE.

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## Table of Contents

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<b>1</b>	<b>Overview .....</b>	<b>1</b>
<b>2</b>	<b>Installing RedHat on MegaRAID IDE .....</b>	<b>3</b>
	Step 1 Download the Required Files .....	3
	Step 2 Create Installation Diskettes .....	3
	Step 3 Installing RedHat .....	6
	Step 4 Installing the Monitoring Software.....	10
<b>3</b>	<b>Running Hyperconf.....</b>	<b>11</b>
	Working with MegaRAID IDE.....	11
	RAID Options .....	11
	Information.....	12
<b>4</b>	<b>Installing MegaRAID IDE on an Existing Installation .....</b>	<b>13</b>
	Installing MegaRAID IDE on an Existing Installation.....	13
	How to Upgrade the Kernel.....	21
	Installing MegaRAID IDE Driver .....	13
	Installing the Monitoring software.....	15
<b>5</b>	<b>Trouble Shooting.....</b>	<b>17</b>
	Common Problems .....	17

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## Preface

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The MegaRAID IDE PCI Bus Master IDE RAID Disk Array Controller provides a cost-effective way to achieve higher transfer rates and reliability. LSI Logic's MegaRAID IDE controller supports two IDE channels and up to four drives. It supports the following drive modes: PIO 0-4, DMA 0-2, and Ultra DMA 0-4. The RAID levels supported are RAID 0, and RAID 1. The highest data transfer rate in UDMA mode 4 is 66 MBs, and in UDMA mode 5 is 100 MBs. This manual describes the MegaRAID IDE (ATA/66) and MegaRAID IDE 100 (ATA/100) IDE controller.

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## Preface, Continued

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**Package Contents** You should have received:

- a MegaRAID IDE RAID Adapter Card
  - a *MegaRAID IDE User's Guide*
  - software license agreement
  - CD/diskette(s) with the MegaRAID IDE software
  - a warranty registration card
- 

**Technical Support** If you need help installing, configuring, or running the MegaRAID IDE Controller, call LSI Logic technical support at 770-246-8600. Before you call, please complete the ***MegaRAID IDE Problem Report*** form on the next page.

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**Web Site** We invite you to access the LSI Logic world wide web site at:  
<http://www.lsillogic.com>.

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## MegaRAID IDE Problem Report Form

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Customer Information		MegaRAID IDE Information	
Name		Today's Date	
Company		Date of Purchase	
Address		Invoice Number	
City/State		Serial Number	
Country		Number of Channels	
email address		Cache Memory	
Phone		Firmware Version	
Fax		BIOS Version	
System Information			
Motherboard:		BIOS manufacturer:	
Operating System:		BIOS Date:	
Op. Sys. Ver.:		Video Adapter:	
MegaRAID IDE Driver Ver.:		CPU Type/Speed:	
Network Card:		System Memory:	
Other disk controllers installed:		Other adapter cards installed:	
Description of problem:			
Steps necessary to re-create problem:			
1.			
2.			
3.			
4.			

### MegaRAID IDE Configuration

MegaRAID IDE Primary Master	
MegaRAID IDE Primary Slave	
MegaRAID IDE Secondary Master	
MegaRAID IDE Secondary Slave	
Raid Mode, Stripe Size	
Array #0 Configuration	
Array #1 Configuration	

### **Disclaimer**

This manual describes the operation of the LSI Logic MegaRAID IDE RAID Disk Array Controller. Although efforts have been made to assure the accuracy of the information contained here, LSI Logic expressly disclaims liability for any error in this information, and for damages, whether direct, indirect, special, exemplary, consequential or otherwise, that may result from such error, including but not limited to the loss of profits resulting from the use or misuse of the manual or information contained therein (even if LSI Logic has been advised of the possibility of such damages). Any questions or comments regarding this document or its contents should be addressed to LSI Logic at the address shown on the cover.

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### ***Disclaimer***

LSI Logic certifies only that this product will work correctly when this product is used with the same jumper settings, the same system configuration, the same memory module parts, and the same peripherals that were tested by LSI Logic with this product. The complete list of tested jumper settings, system configurations, peripheral devices, and memory modules are documented in the LSI Logic Compatibility Report for this product. Call your LSI Logic sales representative for a copy of the Compatibility Report for this product.

## FCC Regulatory Statement

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This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

**Warning:** Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**Note:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a specific installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, try to correct the interference by one or more of the following measures:

- 1) Reorient or relocate the receiving antenna.
- 2) Increase the separation between the equipment and the receiver.
- 3) Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- 4) Consult the dealer or an experienced radio/TV technician for help.

*Shielded interface cables must be used with this product to ensure compliance with the Class B FCC limits.*

### LSI Logic MegaRAID IDE PCI IDE RAID Disk Array Controller

**Model Number:** Series 795

**FCC ID Number:**



# 1 Overview

The purpose of this document is to provide clear instructions on how to install RedHat 6.1 or 6.2 on IDE drives attached to the LSI Logic IDE RAID Controller known as MegaRAID IDE. This document caters to all levels of Linux users. This includes beginning to advanced Linux users. For this reason, advanced users will find parts of this document elementary.

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## 2 Installing RedHat on MegaRAID IDE

The following steps are required to successfully install the RedHat based Linux Operating System on MegaRAID IDE:

Step	Description
1	Download the required files
2	Create installation diskettes (two)
3	Installing RedHat
4	Installing the monitoring software

### Step 1 Download the Required Files

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Download the required files from the LSI Logic web site located at <http://www.lsillogic.com>. The files are listed below:

File	Description
HYPERCONF-1.0-3.I386.RPM	This file is a RedHat Package Manager (RPM) file. It contains the MegaRAID IDE Monitoring software. RPM files are discussed in depth in Chapter 4.
Boot.img Post.img Postsmplimg	These files are used to create the boot floppies used for the installation. They are the following:
KERNEL-2.2.16-22-i686.RPM	This file is a RedHat Package Manager (RPM) file. It contains modules required to complete the installation of the Operating System.

**Note:** New versions of the above files will be made available. The new files will have the same basic name. For example: HYPERCONF-1.0-2.I386.RPM will be replaced by HYPERCONF-1.0-4.I386.RPM.

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### Step 2 Create Installation Diskettes

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Step 2 requires a second system with either Microsoft Windows 95/98 or a UNIX based Operating System and two formatted floppy diskettes. The required Installation Diskettes are created on this second system.

## Step 2 Create Installation Diskettes, Continued

### Windows 95/98 , Continued

Steps	Description
1	<p>Go to the directory where the files are located.</p> <p>DIR&lt;enter&gt;</p> <p>The following is an example of what will appear:</p> <p>Volume in drive C has no label Volume Serial Number is XXXX-XXXX Directory of C:\LINUX_BOOT\  . .. boot.img post.img postsmp.img RAWRITE 4 file(s) 2 dir(s)</p> <p>C:\LINUX_BOOT\  The files listed should be as follows:</p> <p>Boot.img Post.img Postsmp.img Rawrite.exe</p>
2	<p>Once you have confirmed the files are in the same directory, type the following command followed by &lt;enter&gt; to create the two installation diskettes:</p> <p>RAWRITE&lt;enter&gt;</p> <p>You will then be prompted to enter the name of the boot image file. Type</p> <p>BOOT.IMG&lt;enter&gt;</p> <p>Next, you will be prompted for the target disk drive. Insert a floppy disk into the floppy disk drive and type</p> <p>A&lt;enter&gt;</p> <p>Do not remove the disk until the command prompt returns and the floppy disk drive light goes out.</p>

Cont'd

## Step 2 Create Installation Diskettes, Continued

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### Windows 95/98 , Continued

Steps	Description
3	<p>After you have successfully created the first diskette, insert the second disk. You can now start to create the post installation disk. Type the same command again followed by &lt;enter&gt; to create the second installation diskette:</p> <pre>RAWRITE&lt;enter&gt;</pre> <p>You will again be prompted to enter the name of the boot image file. This time type</p> <pre>post.IMG&lt;enter&gt;</pre> <p>Next, you will be prompted for the target disk drive. Insert a floppy disk into the floppy disk drive and type</p> <pre>A&lt;enter&gt;</pre> <p>Once again, do not remove the disk until the command prompt returns and the floppy disk drive light goes out.</p> <p>If you have a dual processor system use <code>postsmp.img</code> instead of <code>post.img</code></p>
4	<p>Congratulations! You should now have two floppies. Windows 95/98 can no longer access these floppies. Proceed to <i>Step 3 Installing RedHat</i>.</p>

### Linux

Steps	Description
1	<p>Create the boot floppy using the following command:</p> <pre>dd if=/dev/fd0 of=boot.img</pre> <pre>[root@localhost install]# dd if=/dev/fd0 of=boot.img 2880+0 records in 2880+0 records out [root@localhost install]#</pre>
2	<p>Create the Post Installation floppy using the following command:</p> <pre>dd if=/dev/fd0 of=post.img</pre> <pre>[root@localhost install]# dd if=/dev/fd0 of=Oct5/amiboot.img 2880+0 records in 2880+0 records out [root@localhost install]#</pre>
3	<p>Congratulations! You should now have two floppies. Proceed to <i>Step 3 Installing RedHat</i>.</p>

## Step 3 Installing RedHat

Steps	Description
1	Create a RAID array using the MegaRAID IDE BIOS.
2	Remove all hard disk drives from your system not physically attached to MegaRAID IDE.
3	In your system BIOS, change the boot sequence in such a way that the first boot device is the floppy and the second boot device is the SCSI device.
4	<p>Boot your system using the boot floppy and the RedHat CD disc in your CD-ROM drive.</p> <p><b>Note:</b> The boot floppy is the first disk you created using the AMIBOOT.IMG image. Make sure you are booting from the floppy. Check the light on the floppy drive is on during boot up. Do not interrupt the boot process until you reach the first part of the installation (the language selection screen). If you cannot use the mouse do not continue with these instructions but proceed to section <i>Installing the Operating System in TEXT mode</i>.</p>
5	<p>At the first screen, which prompts you to select your language preference, do not click "Next" but instead press the &lt;CTRL&gt;&lt;ALT&gt;&lt;F2&gt; keys at the same time. This will bring you to a shell prompt bash#.</p> <p><b>Note:</b> This is the only way to partition the array. It cannot be done later in the installation.</p>
6	<p>At the shell prompt bash#, use FDISK to partition the drive. Type the following command to partition the array:</p> <pre>Bash# fdisk /dev/mr0</pre> <p>This will prompt you with the following screen:</p> <pre>The number of cylinders for this disk is set to 19589. There is nothing wrong with that, but this is larger than 1024, and could in certain setups cause problems with:  1) software that runs at boot time (e.g., LILO)  2) booting and partitioning software from other OSs    (e.g., DOS FDISK, OS/2 FDISK)</pre> <p>Command (m for help):</p>
7	<p>Type &lt;m&gt; and hit &lt;enter&gt; for a list of commands. This will return the following screen</p> <pre>Command action   a toggle a bootable flag   b edit bsd disklabel   c toggle the dos compatibility flag   d delete a partition   l list known partition types   m print this menu   n add a new partition   o create a new empty DOS partition table   p print the partition table   q quit without saving changes   s create a new empty Sun disklabel   t change a partition's system id   u change display/entry units   v verify the partition table   w write table to disk and exit   x extra functionality (experts only)</pre> <p>Command (m for help):</p>

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## Step 3 Installing RedHat, Continued

Steps	Description
8	<p>Select the &lt;p&gt; command to see if any partitions exist in the array. If any partitions exist, you must delete them and create three new partitions. The example below shows the &lt;p&gt; command to see the partition(s) in the RAID and the &lt;d&gt; command to delete the previous partition(s). To confirm that no partitions exist, use the &lt;p&gt; command again.</p> <pre> Command (m for help): p  Disk /dev/amiraid/ar0: 16 heads, 63 sectors, 19589 cylinders Units = cylinders of 1008 * 512 bytes      Device Boot      Start         End      Blocks   Id  System /dev/amiraid/ar0p1    1         19589     9872824+   83   Linux  Command (m for help): d Partition number (1-4): 1  Command (m for help): p  Disk /dev/amiraid/ar0: 16 heads, 63 sectors, 19589 cylinders Units = cylinders of 1008 * 512 bytes      Device Boot      Start         End      Blocks   Id  System </pre> <p>Command (m for help):</p>
9	<p>Create three (3) new partitions on the array. Two will be native Linux partitions. One of the two will be greater than 750 MB and will be used to hold the system files. The other will be less than 250 MB and will be used to hold the boot files. The third partition will be a SWAP partition and will be less than 250 MB.</p> <p>To create a partition, use the &lt;n&gt; command. In the example given below, it shows the use of the &lt;n&gt; command to create three primary partitions. One 2000 MB and two 250 MB in size.</p> <pre> Command (m for help): n Command action   e   extended   p   primary partition (1-4) p Partition number (1-4): 1 First cylinder (1-19589, default 1): Using default value 1 Last cylinder or +size or +sizeM or +sizeK (1-19589, default 19589): +2000M  Command (m for help): n Command action   e   extended   p   primary partition (1-4) p Partition number (1-4): 2 First cylinder (4065-19589, default 4065): Using default value 4065 Last cylinder or +size or +sizeM or +sizeK (4065-19589, default 19589): +250M  Command (m for help): n Command action   e   extended   p   primary partition (1-4) p Partition number (1-4): 3 First cylinder (4573-19589, default 4573): Using default value 4573 Last cylinder or +size or +sizeM or +sizeK (4573-19589, default 19589): +250M </pre>

Cont'd


## Step 3 Installing RedHat, Continued

Steps	Description																																																																																																																																																																																																
	<p>Command (m for help): p</p> <p>Disk /dev/amiraid/ar0: 16 heads, 63 sectors, 19589 cylinders Units = cylinders of 1008 * 512 bytes</p> <table><thead><tr><th></th><th>Device</th><th>Boot</th><th>Start</th><th>End</th><th>Blocks</th><th>Id</th><th>System</th></tr></thead><tbody><tr><td></td><td>/dev/amiraid/ar0p1</td><td></td><td>1</td><td>4064</td><td>2048224+</td><td>83</td><td>Linux</td></tr><tr><td></td><td>/dev/amiraid/ar0p2</td><td></td><td>4065</td><td>4572</td><td>256032</td><td>83</td><td>Linux</td></tr><tr><td></td><td>/dev/amiraid/ar0p3</td><td></td><td>4573</td><td>5080</td><td>256032</td><td>83</td><td>Linux</td></tr></tbody></table>		Device	Boot	Start	End	Blocks	Id	System		/dev/amiraid/ar0p1		1	4064	2048224+	83	Linux		/dev/amiraid/ar0p2		4065	4572	256032	83	Linux		/dev/amiraid/ar0p3		4573	5080	256032	83	Linux																																																																																																																																																																
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10	<p>You should now have three partitions. You must convert one of these partitions to a SWAP partition. To do this, use the &lt;t&gt; command.</p> <p>Command (m for help): t Partition number (1-4): 2 Hex code (type L to list codes): l</p> <table><tbody><tr><td>0</td><td>Empty</td><td>17</td><td>Hidden HPFS/NTF</td><td>5c</td><td>Priam Edisk</td><td>a6</td><td>OpenBSD</td></tr><tr><td>1</td><td>FAT12</td><td>18</td><td>AST Windows swa</td><td>61</td><td>SpeedStor</td><td>a7</td><td>NeXTSTEP</td></tr><tr><td>2</td><td>XENIX root</td><td>1b</td><td>Hidden Win95 FA</td><td>63</td><td>GNU HURD or Sys</td><td>b7</td><td>BSDI fs</td></tr><tr><td>3</td><td>XENIX usr</td><td>1c</td><td>Hidden Win95 FA</td><td>64</td><td>Novell Netware</td><td>b8</td><td>BSDI swap</td></tr><tr><td>4</td><td>FAT16 &lt;32M</td><td>1e</td><td>Hidden Win95 FA</td><td>65</td><td>Novell Netware</td><td>c1</td><td>DRDOS/sec (FAT-</td></tr><tr><td>5</td><td>Extended</td><td>24</td><td>NEC DOS</td><td>70</td><td>DiskSecure Mult</td><td>c4</td><td>DRDOS/sec (FAT-</td></tr><tr><td>6</td><td>FAT16</td><td>3c</td><td>PartitionMagic</td><td>75</td><td>PC/IX</td><td>c6</td><td>DRDOS/sec (FAT-</td></tr><tr><td>7</td><td>HPFS/NTFS</td><td>40</td><td>Venix 80286</td><td>80</td><td>Old Minix</td><td>c7</td><td>Syrinx</td></tr><tr><td>8</td><td>AIX</td><td>41</td><td>PPC PREP Boot</td><td>81</td><td>Minix / old Lin</td><td>db</td><td>CP/M / CTOS / .</td></tr><tr><td>9</td><td>AIX bootable</td><td>42</td><td>SFS</td><td>82</td><td>Linux swap</td><td>e1</td><td>DOS access</td></tr><tr><td>a</td><td>OS/2 Boot Manag</td><td>4d</td><td>QNX4.x</td><td>83</td><td>Linux</td><td>e3</td><td>DOS R/O</td></tr><tr><td>b</td><td>Win95 FAT32</td><td>4e</td><td>QNX4.x 2nd part</td><td>84</td><td>OS/2 hidden C:</td><td>e4</td><td>SpeedStor</td></tr><tr><td>c</td><td>Win95 FAT32 (LB</td><td>4f</td><td>QNX4.x 3rd part</td><td>85</td><td>Linux extended</td><td>eb</td><td>BeOS fs</td></tr><tr><td>e</td><td>Win95 FAT16 (LB</td><td>50</td><td>OnTrack DM</td><td>86</td><td>NTFS volume set</td><td>f1</td><td>SpeedStor</td></tr><tr><td>f</td><td>Win95 Ext'd (LB</td><td>51</td><td>OnTrack DM6 Aux</td><td>87</td><td>NTFS volume set</td><td>f4</td><td>SpeedStor</td></tr><tr><td>10</td><td>OPUS</td><td>52</td><td>CP/M</td><td>93</td><td>Amoeba</td><td>f2</td><td>DOS secondary</td></tr><tr><td>11</td><td>Hidden FAT12</td><td>53</td><td>OnTrack DM6 Aux</td><td>94</td><td>Amoeba BBT</td><td>fd</td><td>Linux raid auto</td></tr><tr><td>12</td><td>Compaq diagnost</td><td>54</td><td>OnTrackDM6</td><td>a0</td><td>IBM Thinkpad hi</td><td>fe</td><td>LANstep</td></tr><tr><td>14</td><td>Hidden FAT16 &lt;3</td><td>55</td><td>EZ-Drive</td><td>a5</td><td>BSD/386</td><td>ff</td><td>BBT</td></tr><tr><td>16</td><td>Hidden FAT16</td><td>56</td><td>Golden Bow</td><td></td><td></td><td></td><td></td></tr></tbody></table> <p>Hex code (type L to list codes): 82 Changed system type of partition 2 to 82 (Linux swap)</p> <p>Command (m for help): p</p> <p>Disk /dev/amiraid/ar0: 16 heads, 63 sectors, 19589 cylinders Units = cylinders of 1008 * 512 bytes</p> <table><thead><tr><th></th><th>Device</th><th>Boot</th><th>Start</th><th>End</th><th>Blocks</th><th>Id</th><th>System</th></tr></thead><tbody><tr><td></td><td>/dev/amiraid/ar0p1</td><td></td><td>1</td><td>4064</td><td>2048224+</td><td>83</td><td>Linux</td></tr><tr><td></td><td>/dev/amiraid/ar0p2</td><td></td><td>4065</td><td>4572</td><td>256032</td><td>82</td><td>Linux swap</td></tr><tr><td></td><td>/dev/amiraid/ar0p3</td><td></td><td>4573</td><td>5080</td><td>256032</td><td>83</td><td>Linux</td></tr></tbody></table>	0	Empty	17	Hidden HPFS/NTF	5c	Priam Edisk	a6	OpenBSD	1	FAT12	18	AST Windows swa	61	SpeedStor	a7	NeXTSTEP	2	XENIX root	1b	Hidden Win95 FA	63	GNU HURD or Sys	b7	BSDI fs	3	XENIX usr	1c	Hidden Win95 FA	64	Novell Netware	b8	BSDI swap	4	FAT16 <32M	1e	Hidden Win95 FA	65	Novell Netware	c1	DRDOS/sec (FAT-	5	Extended	24	NEC DOS	70	DiskSecure Mult	c4	DRDOS/sec (FAT-	6	FAT16	3c	PartitionMagic	75	PC/IX	c6	DRDOS/sec (FAT-	7	HPFS/NTFS	40	Venix 80286	80	Old Minix	c7	Syrinx	8	AIX	41	PPC PREP Boot	81	Minix / old Lin	db	CP/M / CTOS / .	9	AIX bootable	42	SFS	82	Linux swap	e1	DOS access	a	OS/2 Boot Manag	4d	QNX4.x	83	Linux	e3	DOS R/O	b	Win95 FAT32	4e	QNX4.x 2nd part	84	OS/2 hidden C:	e4	SpeedStor	c	Win95 FAT32 (LB	4f	QNX4.x 3rd part	85	Linux extended	eb	BeOS fs	e	Win95 FAT16 (LB	50	OnTrack DM	86	NTFS volume set	f1	SpeedStor	f	Win95 Ext'd (LB	51	OnTrack DM6 Aux	87	NTFS volume set	f4	SpeedStor	10	OPUS	52	CP/M	93	Amoeba	f2	DOS secondary	11	Hidden FAT12	53	OnTrack DM6 Aux	94	Amoeba BBT	fd	Linux raid auto	12	Compaq diagnost	54	OnTrackDM6	a0	IBM Thinkpad hi	fe	LANstep	14	Hidden FAT16 <3	55	EZ-Drive	a5	BSD/386	ff	BBT	16	Hidden FAT16	56	Golden Bow						Device	Boot	Start	End	Blocks	Id	System		/dev/amiraid/ar0p1		1	4064	2048224+	83	Linux		/dev/amiraid/ar0p2		4065	4572	256032	82	Linux swap		/dev/amiraid/ar0p3		4573	5080	256032	83	Linux
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11	<p>The final command that we will use is &lt;w&gt; and that will write the partition table.</p> <p>Command (m for help): w</p>																																																																																																																																																																																																
12	<p>Press &lt;CTRL&gt;&lt;ALT&gt;&lt;F7&gt; to return to the installation window. Proceed to load RedHat. Stop when it gives you the option to partition your drive manually or automatically. The window will prompt you with the following options:</p> <ul style="list-style-type: none"><li>Remove data</li><li>Manually Partition</li></ul> <p>Select to manually partition your drive. Click Next and the Disk Druid window will appear showing all the partitions in your array. If you created a RAID 1 array spanning across two drives with three partitions, you will see a total of six partitions even though you only created three (using FDISK). The reason for this is because a RAID 1 array exists when you mirror the information on one drive to another. Since you have created a partition in a RAID 1 array, what you actually did is create a partition on each of the drives.</p>																																																																																																																																																																																																

Cont'd



## Step 3 Installing RedHat, Continued

Steps	Description																																																					
13	<div><div><h3>Partitions</h3><p>Where do you want to install Red Hat Linux?</p><p><b>Please note:</b> If you are performing a <b>Partitionless Installation</b> you will need to define an existing DOS/Windows partition as root, shown as /. Click on the FAT partition you want to select for this installation. Once it is highlighted, click <i>Edit</i> to assign it the mount point of / (root). Click <i>Ok</i> when you're done. Once you have confirmed this choice, you will need to</p></div><div><div>Partitions</div><table><thead><tr><th>Mount Point</th><th>Device</th><th>Requested</th><th>Actual</th><th>Type</th></tr></thead><tbody><tr><td>/boot</td><td>hde1</td><td>900M</td><td>3669M</td><td>Linux native</td></tr><tr><td>/</td><td>hde5</td><td>125M</td><td>125M</td><td>Linux native</td></tr><tr><td>&lt;Swap&gt;</td><td>hda6</td><td>125M</td><td>125M</td><td>Linux swap</td></tr><tr><td></td><td>hdg1</td><td>900M</td><td>3669M</td><td>Linux native</td></tr><tr><td></td><td>hdg5</td><td>125M</td><td>125M</td><td>Linux native</td></tr><tr><td></td><td>hdg6</td><td>125M</td><td>125M</td><td>Linux swap</td></tr></tbody></table><div><div>Add...</div><div>Edit...</div><div>Delete</div><div>Reset</div><div>Make RAID Device</div></div><div>Drive Summary</div><table><thead><tr><th>Drive</th><th>Geom [C/H/S]</th><th>Total (M)</th><th>Free (M)</th><th>Used (M)</th><th>Used (%)</th></tr></thead><tbody><tr><td>hda</td><td>[ 969/128/63]</td><td>3815M</td><td>0M</td><td>3815M</td><td>100%</td></tr><tr><td>hda</td><td>[ 969/128/63]</td><td>3815M</td><td>0M</td><td>3815M</td><td>100%</td></tr></tbody></table></div></div> <div><div><div>? Hide Help</div><div><div>Back</div><div>Next</div></div></div><p>Click on Edit and assign mount points to the first three partitions. Continue with the normal installation until you come to the boot disk creation screen.</p></div>	Mount Point	Device	Requested	Actual	Type	/boot	hde1	900M	3669M	Linux native	/	hde5	125M	125M	Linux native	<Swap>	hda6	125M	125M	Linux swap		hdg1	900M	3669M	Linux native		hdg5	125M	125M	Linux native		hdg6	125M	125M	Linux swap	Drive	Geom [C/H/S]	Total (M)	Free (M)	Used (M)	Used (%)	hda	[ 969/128/63]	3815M	0M	3815M	100%	hda	[ 969/128/63]	3815M	0M	3815M	100%
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14	<div><p>Press &lt;CTRL&gt;&lt;ALT&gt;&lt;F2&gt; when you reach the following boot disk creation screen:</p><div><div><div>Online Help</div><div><h3>Boot Disk Creation</h3><p>Insert a blank, formatted diskette into your floppy drive, and click <b>Next</b> to continue.</p></div></div><div><div><div>Bootdisk Creation</div><div><p>Please remove the install floppy (if used) and insert a blank floppy in the first floppy drive. All data on this disk will be erased during creation of the boot disk.</p><div><input type="checkbox"/> Skip boot disk creation</div></div></div></div><div><div><div>? Hide Help</div><div><div>Back</div><div>Next</div></div></div></div></div></div>																																																					

Cont'd

## Step 3 Installing RedHat, Continued

Steps	Description
15	At the prompt type  Bash# runpinst  You will then be prompted to enter the AMIPINST floppy. Insert this floppy and hit the <enter> key.
16	When the prompt returns and the floppy drive light turns off, press <CTRL><ALT><F7> to return to the installation window.  <b>Note:</b> Do not create a boot floppy. It is not supported by MegaRAID IDE at this time.  Click Next, then Exit and Reboot. Remove the floppy and the RedHat CD while your system is rebooting. When your system boots-up, log in as root.

## Step 4 Installing the Monitoring Software

The final step is to install the two RedHat Package Manager (RPM) files. They are as follows:

- Hyperconf-1.0-2.i386.rpm
- Kernel-2.2.16-3.i386.rpm.

Go to the directory where these files are located and install them using the following command:

```
# rpm -I Kernel-2.2.16-3.i386.rpm.  
# rpm -I Hyperconf-1.0-2.i386.rpm
```

**Hyperconf** Hyperconf is the monitoring software that is used to keep track of your RAID array. It is installed when you install hyperconf-1.0.2.rpm using the RedHat Package Manager (RPM). This software allows you to monitor the status of your RAID array. It will also allow you to set a number of variables that will determine the behavior of your RAID array.

**Installing Hyperconf** Hyperconf is simple to install. Go to the directory where the RPM file HYPERCONF-1.0.2.RPM is located. At the command prompt type the following:

```
rpm -I hyperconf-1.0.2.rpm
```

This will install the software. The following files are installed on your system:

File	Location	Description
HYPERCONF8.RZ	USR/MAN8/	Man Page for Hyperconf
README	USR/DOC/HYPERCONF-1.0.2/	README for Hyperconf
HYPERCONF	/USR/SBIN/	Executable for Hyperconf
SPY	/RC.D/INIT.D/	Batch file that loads SPYD (Soft link is created to RC3.D to start the service in run level 3)
SPYD	/USR/SBIN/	Damon for Hyperconf

## 3 Running Hyperconf

To run MegaRAID IDE simply log on as super user and type the following at the command prompt:

```
Hyperconf
```

---

**Getting Help** The easiest way to get help on Hyperconf is to access the Man Page. This can be done by typing the following at the command prompt:

```
Man Hyperconf
```

---

### Working with MegaRAID IDE

---

To activate the menu in Hyperconf, press the <F10> key on your keyboard.

**Note:** Hyperconf cannot be navigated using the mouse

### RAID Options

---

You cannot create or delete a RAID array using Hyperconf. This can only be done in the BIOS utility during boot-up. However, there are a number of options that you can set to determine the behavior of your RAID array. For example, if one of your drives in a Mirror RAID array fails, you can choose the action that will take place.

**File Menu Select Options** This will show you the options that are available and their current status.

Option	Description
Error Polling Interval <input type="checkbox"/> sec	The length of time that can elapse between each status check of the RAID array.
Error Threshold <input type="checkbox"/>	Enter a value for the number of compare errors a drive can have before it is marked as having failed.
When Error Threshold Is Reached Fail Drive <input type="checkbox"/>	Check this box if you want a drive to be marked as having failed when it has reached the error threshold + 1.
Start Automatic rebuilding <input type="checkbox"/>	Start to rebuild a drive automatically if a drive fails.
Check Array for Rebuild at Start up <input type="checkbox"/>	Check the status of the array at start up to see if a drive has failed and a Rebuild is required.
When Rebuilding error threshold is reached stop rebuilding <input type="checkbox"/>	Check this box if you wish to stop rebuilding if the error threshold has been surpassed.
When consistency error found	Make the contents of all drives identical. A consistency check will examine both drives in RAID 1 to ensure that the information on both drives are identical. If they are not identical, checking this box will synchronize the information on both drives.
Delete activity log file <input type="checkbox"/>	Check this box to delete the activity log file.
Activity log file size <input type="checkbox"/> KB	Enter a value for the maximum size (in KB) the activity log file can grow.

## Information

To obtain information about your system, press the <F10> and <Tab> keys to access Information.

Item	Description
Controller	<p>Here you will find information concerning the controller. The fields areas follows:</p> <ul style="list-style-type: none"> <li>Model This is model of the MegaRAID IDE controller that you have in your system</li> <li>PCI BUS The BUS number</li> <li>PCI number The PCI number</li> <li>Driver Version The version of the driver software</li> <li>Primary Base Address The Primary Base Address</li> <li>Primary Control Address The Primary Control Address</li> <li>Secondary Base Address The Secondary Base Address</li> <li>Secondary Control Address The Secondary Control Address</li> <li>IRQ Level The IRQ that is assigned to your device</li> </ul>
Array	<p>Here you will find information concerning the Array. The fields areas follows:</p> <ul style="list-style-type: none"> <li>Model The RAID level</li> <li>Status The status of the RAID. Online, Degraded or FAILED.</li> <li>Stripe size The stripe size on the RAID.</li> <li>Capacity The capacity of the RAID.</li> <li>Mount Point The directory where the RAID is mounted.</li> <li>Controller The controller that the RAID belongs to.</li> <li>Physical Drives The drives that are in the RAID.</li> </ul>
Physical Drives	<p>Here you will find information concerning the Physical Drives. The fields areas follows:</p> <ul style="list-style-type: none"> <li>Model The manufacture model of the drive.</li> <li>Serial Number The Serial number of the drive.</li> <li>Firmware Revision The Version of the firmware that is on the drive.</li> <li>Status The status of the drive. It will read online or offline depending on whether on not the drive is available.</li> <li>Error Count The total number of compare errors on the drive.</li> <li>Controller The controller that the drive is attached to.</li> <li>Array The array to which the drive belongs</li> <li>Capacity The capacity of the drive in gigabytes</li> <li>Transfer Mode The transfer mode of the drive e.g. UDMA 2 = 33Mb/s</li> </ul>
Error Log	Log the RAID errors
Activity Log	Logs activity on the RAID such as the RAID going degraded.
Mirror	<p>Mirror options include the following:</p> <ul style="list-style-type: none"> <li>Rebuild Allows the user to start a manual rebuild if a RAID has gone degraded</li> <li>Consistency Check Allows for a manual start of a consistency check.</li> <li>Activity status Log the status of a rebuild or consistency Check.</li> </ul>

## 4 Installing MegaRAID IDE on an Existing Installation

### Installing MegaRAID IDE on an Existing Installation

---

If you have RedHat installed on your system and want to add additional storage, these are the steps that you should follow.

- Upgrade the Linux Kernel to provide support for MegaRAID IDE
  - Install MegaRAID IDE drive(s)
  - Install the monitoring software
- 

### How to Upgrade the Kernel

---

The standard Redhat installation installs kernel 2.2.14-5. Redhat Linux kernel 2.2.14-5.0 does not come with support for the CMD chip on the MegaRAID IDE Card. The kernel must be updated to kernel 2.2.16-22-MegaIDE. This kernel is only available on the LSI Logic web site at <http://www.lsillogic.com>.

To upgrade the kernel, follow the steps below:

**Step 1** Log on to your system as a super user and go to the /usr/src directory. Find a soft link called "Linux" and remove it by using "rm Linux". Once the soft link is removed, copy the 2.2.16-MegaIDE kernel to this directory. Extract the file using "tar -zxvf linux-2.2.16-MegaIDE.tgz". Create a softlink to this directory with the command `ln -s linux-2.2.16-MegaIDE linux`

**Step 2** In the directory /usr/src/linux run the command "make menuconfig". Under block devices make sure the following options are selected:

```
<*>CMD640 chipset bugfix/support
<*>CMD640 enhanced support
<*>Generic PCI bus-master DMA support
<*>CMD64X chipset support
```

Exit menuconfig saving the configuration. Run the following commands:

```
"make clean"
"make depend"
"make bzImage"
"make modules"
"make modules_install"
"cp /usr/src/linux/arch/i386/boot/bzImage /boot/2.2.16-MegaIDE"
```

**Step 3** The final steps involves editing the file lilo.conf. This file can be found in the directory /etc. Open the file using the vi editor with the following command "vi /etc/lilo.conf" and add the following lines to the file:

```
image =/boot/2.2.16
label =2.2.16
read-only
root=/dev/hda5
```

## How to Upgrade the Kernel, Continued

---

The line `root=/dev/hda5` will not be correct if you are booting from a different partition. Look for a previous entry in the file for the correct partition.

```
root=/dev/hda?
```

Exit and save `lilo.conf`.

Run the command "`lilo -v`"

Reboot.

At the boot prompt hit the tab key. This should give you the option to boot to the new kernel.

---

## Installing MegaRAID IDE Driver

---

Download the zipped driver file for RedHat 6.1 and 6.2 from the LSI Logic web site (<http://www.lsillogic.com> ). It contains the following files:

- Amiraid.o
- MAKEDEV

Create a directory called `/usr/src/linux/drivers/block/amiraid` and copy the above files to it.

Run the following command:  
`"/MAKEDEV"`

To load Hyperconf driver run the command:  
`"insmod amiraid.o"`

To unload the driver run the command:  
`"rmmod amiraid"`

**Note:** The driver will not load unless you have created a RAID.

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## Installing the Monitoring software

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The monitoring software is contained in the zipped driver you download in the last section.

Install the monitoring software using the command:  
`"rpm -I hyperconf-1.0-x.i386.rpm"`

**Note:** Substitute *x* for the version number.

For instructions on how to use the monitoring software see Chapter 3 Running Hyperconf.

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## 5 Troubleshooting

### Common Problems

Problem	Possible Solution(s)
Hyperconf does not show any information.	Make sure you have created a RAID, Hyperconf cannot report on what does not exist.
I have saved my options in Hyperconf but it does not do what I ask of it.	Check to make sure the daemon (spyd) is running. You can do this but entering the following command <i>pidof spyd</i> . The number of the process should be return. If no number is returned the spyd is not running. Spyd can be started by entering the command <i>spyd</i> . <i>Spyd is only started at boot time for run level 3.</i>
When I load the driver amiraid.o I get an error that the driver was not compiled for this kernel.	Force the driver to load using the command <code>insmod -f amiraid.o</code>

